



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,298	07/09/2003	Osamu Furukawa	108066-00087	7118

4372 7590 02/23/2007
ARENT FOX PLLC
1050 CONNECTICUT AVENUE, N.W.
SUITE 400
WASHINGTON, DC 20036

EXAMINER

CARPIO, IVAN HERNAN

ART UNIT	PAPER NUMBER
----------	--------------

2841

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/615,298

Applicant(s)

FURUKAWA ET AL.

Examiner

Ivan H. Carpio

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7,9 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1,3,5,7 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable by Huang (US Patent 6777819) in view of Kemmochi (US 2004/0032704 A1).

With respect to claim 1 Huang teaches a wiring substrate (Fig. 1, element 20) having wiring patterns (Fig. 1, element 202) formed on one side and external connection terminals (Fig.1, element 203) formed on the other side, the wiring patterns and the external connection terminals being connected with each other via holes (paragraph [0016], lines 6-8) or through holes, a plurality of electronic component devices (Fig. 1, elements 21 and 22) mounted on the one side of the wiring substrate, at least one of the plurality of electronic component devices being fastened face up (Fig. 1, element 21) to the one side of the wiring substrate and having a connection terminal, a bonding wire (Fig.1, element 23) connecting the connection terminal of the one of the plurality of the

Art Unit: 2841

electronic component devices with another of the plurality of electronic component device or with one of the wiring patterns formed on the one side of the wiring substrate, and an exterior resin layer (Fig. 1, element 26) formed on the wiring substrate which covers the plurality of electronic component devices and the bonding wire. Huang does not specifically teach that the bonding wire has an inductance that eliminates ripples in a frequency band characteristic of the one electronic component device, to which one terminal of the bonding wire is connected. Kemmochi teaches a bonding wire with an inductance that eliminates ripples in a frequency band characteristic of an electronic component (bottom of paragraph 0095). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the bonding, taught by Huang, to have an inductance that eliminates ripples in a frequency band characteristic of an electronic component, as taught by Kemmochi for the purpose of improving signal integrity.

With respect to claim 9 and with all the limitations of claim 1, modified Huang teaches all of the limitations except that the inductance of the bonding wire is 1nh/mm. It is well known in the art to use any inductance necessary to accomplish design characteristics specific to the project at hand. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any suitable inductance, including 1nh/mm, for the bonding wire, taught by modified Huang, for the purpose accomplishing design specific characteristics. Furthermore it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Kemmochi, as applied to claim 1 above, and further in view of Fujimoto (US 2001/0006456 A1

With respect to claim 3 and with all the limitations of claim 1, Huang teaches that an electronic component device fastened face up to the one side of the wiring substrate but does not specify that it is attached by a conductive paste. Fujimoto teaches a component device attached face up to a substrate by a conductive paste (paragraph [0039], lines 1-4). It would have been obvious to attach the electronic component to the substrate taught by Huang using the conductive paste taught by Fujimoto for the purpose of conducting heat away from the component.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (US Patent 6784765) in view of Huang and further in view of Kemmochi.

With respect to claim 5, Yamada teaches a surface mounted electronic component module (Fig. 4) comprising, a wiring substrate (Fig. 4, elements 19,15 and 16) having wiring patterns (Fig. 4, elements 2) formed on one side and external connection terminals (Fig.4, elements 7) formed on the other side, the wiring patterns

Art Unit: 2841

3), a semiconductor chip (Fig. 4, element 4) mounted on the one side of the wiring substrate, having a connection terminal, and forming a switch (column 12, lines 15-20) for changing over the opening/closing of radio frequency transmission/reception signals and a decoder circuit (fig. 4, elements 2) for controlling the switch changeover operations; a surface acoustic wave filter (Fig. 4, element 5) mounted on the one side of the wiring substrate, and electrically connected to the switch, an exterior resin layer (Fig. 4, element 6) formed on the wiring substrate which covers the semiconductor chip and the acoustic wave filter. Yamada does not teach that the semiconductor chip is fastened face up, and a bonding wire having one terminal connected to the surface acoustic wave filter and the other terminal connected to the connection terminal of the semiconductor chip the bonding wire having a specific inductance that eliminates ripples in a frequency band characteristic of the surface acoustic wave filter. Huang teaches a semiconductor device (Fig. 1, element 21) that is face up and a bonding wire with one terminal connected to the connection terminal of the semiconductor chip and the other end connected to the connection terminal of another component (Fig. 1, element 22). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the mounting structure taught by Huang on the RF device taught by Yamada, thereby connecting the surface acoustic wave filter to the semiconductor device by bonding wire, because doing so would make the positioning of the chips on the wiring substrate more flexible due to the wire length. Kemmochi teaches a bonding wire with an inductance that eliminates ripples in a frequency band characteristic of an electronic component (bottom of paragraph 0095). It would have been obvious to one of ordinary

Art Unit: 2841

skill in the art at the time of the invention to have the bonding, taught by Huang, to have an inductance that eliminates ripples in a frequency band characteristic of an electronic component, as taught by Kemmochi for the purpose of improving signal integrity.

With respect to claim 9 and with all the limitations of claim 5, modified Yamada teaches all of the limitations except that the inductance of the bonding wire is 1nh/mm. It is well known in the art to use any inductance necessary to accomplish design characteristics specific to the project at hand. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any suitable inductance, including 1nh/mm, for the bonding wire, taught by modified Huang, for the purpose accomplishing design specific characteristics. Furthermore it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada, Huang, Kemmochi and further in view of Fujimoto (US Patent 6777819).

With respect to claim 7 and with all the limitations if claim 5, Yamada and Huang teach all of the limitations except that the semiconductor chip mounted face up on the one side of the wiring substrate, is fastened to the wiring substrate by a bond made of conductive paste. Fujimoto teaches a component device attached face up to a substrate by a conductive paste (paragraph [0039], lines 1-4). It would have been obvious to attach the electronic component to the substrate taught by Yamada using the

Art Unit: 2841

conductive paste taught by Fujimoto for the purpose of conducting heat away from the component.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Parayanthal (US 6057954) discloses a bonding wire with and inductance of 1nh/mm.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ivan H. Carpio whose telephone number is 571-272-8396. The examiner can normally be reached on T-F 7:00am - 5:30pm.

Art Unit: 2841

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IC


Tuan Dinh
AU 2841